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(1) Proposed Industrial Categories;

(2) A Study of Industrial Categories

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PROPOSED INDUSTRIAL CATEGORIES

Wu Li-pen

I. THE BACKBONE OF INDUSTRIAL CATEGORIES

For the purpose of levying taxes on industrial and commercial enterprises, commodities, business licenses, and for facilitating the registration of industrial and commercial enterprises, the government recently promulgated "Provisional Regulations for Levying Business Taxes on Industrial and Commercial Enterprises," "Provisional Regulations for Commodity Taxation," "Provisional Rules for Business Taxes in Shanghai," and "Provisional Rules for Licensing Industrial and Commercial Enterprises in Shanghai." Despite the variety of names and the different kinds of industries mentioned in all these provisional rules and regulations there remains an apparent lack of uniformity and an incompleteness of industrial categories. This lack of uniformity is due largely to the fact that these provisional rules and regulations are designed for different needs and purposes. For example, a total of 138 categories of industries are listed in the "Provisional Regulations for Levying Business Taxes on Industrial and Commercial Enterprises," 44 in the "Provisional Rules for Business Taxes in Shanghai," and 47 in the "Provisional Rules for Licensing Industrial and Commercial Enterprises in Shanghai." The lack of uniformity is all too apparent!

From the above example, it can be seen that a uniform and systematic national industrial classification has not been adopted.

In order to foster and facilitate industrial construction in China it is absolutely necessary that we establish a systematic and scientific industrial classification which should contain the following basic features:

1. Definite names, natures and products for various industries;

2. The establishment of the relationship of the various industries and the fixing of clear-cut systems and categories;

3. A list of the various industries, relegating each to its proper position and assigning it a definite classification number.

In order to achieve these objectives, we must first make a scientific analysis of the purposes and functions of the various industries.

The purpose and function of industry is to turn various raw materials into new products through industrial processes so as to increase the value and enlarge the usefulness of such products. The scope of this productive activity therefore covers the following three factors:

1. the nature of raw materials;
2. the method of production;
3. and the use of the products.

These three factors are helpful in classifying industries. Only when all these factors are considered can a complete and systematic industrial classification be made. If these three factors are isolated, or if only one factor is taken into account, complete and systematic classification is impossible. Therefore, we must consider these three factors fully when systematizing industries. Now, let us proceed further to make a more detailed analysis of the process of turning "raw materials" into "new products" through "industrial processes".

In the earliest period of industrialization goods were produced according to the kind of raw materials available; industrial categories were therefore based primarily on the raw material factor. With respect to the supply of raw materials, they were simply classified as coming from plants or from animals. Later, when improvements were gradually made in the production methods, raw materials were classified as being organic or inorganic, metallic or nonmetallic. However, since the beginning of this century, due to the advance of scientific discoveries, great strides have been made in improving production methods. The supply of raw materials has also been greatly expanded by scientific means. For example, synthetic rubber and artificial fibres can be made out of coal; after scientific treatment, wood can be used in place of iron or cement, or used in making airplane frames, box cars, ships, and even synthetic fuel. From this it can be said that by his creative genius man has conquered nature; he has immensely expanded the supply source of raw materials.

As this process is still continuing, raw materials are, therefore, no longer a determining factor in making industrial categories.

Production methods can basically be reduced to the two functions of physics and chemistry, although the former can be broken down into thermodynamics, hydraulics, electricity and the latter into organic and inorganic chemistry. However, such subdivisions are too theoretical in nature and hence cannot be used as a basis in making industrial categories. Further, the modern methods of production are too complex and it is only rarely that a simple physical function or chemical reaction can accomplish the task of turning raw materials into finished and usable products. Today, as science becomes more and more advanced, chemistry has become more and more involved in all fields of activity. The French chemist M. P. Berthelot holds the view that "chemistry is an analytic as well as a synthetic science". This gives an indication of how vast a field the activity of chemistry involves. Again, S. A. Arrhenius who originated the theory of ionization attempts to explain in his book, "Chemistry in Modern Life," that chemistry has become absolutely inseparable from modern life. All the above proves one point, that the method of production cannot serve as an adequate basis for making industrial categories.

This leads us to the conclusion that the use to which a product is to be put is the most important element in making industrial categories. With the goal of higher quality on the one hand and lower price on the other, new and different products

are continuously being produced to satisfy human wants and desires. How to raise the standard of living of the people is a driving force behind all human endeavors in constantly improving industrial methods and techniques. From this standpoint, all industrial products may be placed in the following two broad categories:

1. The industrial system of manufacturing producer's goods;

2. The industrial system of manufacturing consumer's goods.

From these two main categories or systems branches and subdivisions can be made which constitute the whole body of industrial categories. And when such a method of classification is made by coordinating and considering the factors of the nature of raw materials and the methods of production, complete and systematic industrial categories are made.

II. THE IMPORTANCE OF INDUSTRIAL CLASSIFICATION

When a scientific and systematic industrial classification is made, great benefits will accrue to individual industries as well as to the nation as a whole.

1. From the standpoint of the nation as a whole, the chief benefits of industrial classification are as follows:

a. When making industrial policies, industrial classification can provide the government with correct criteria for giving protection, encouragement, and assistance to industries. Furthermore, it can help to create correct policies for the levying of industrial taxes.

It can help to facilitate industrial construction on a high priority basis for the attainment of balanced development of all industries.

b. Industrial categories can help to coordinate the task of industrial construction with the task of industrial education, improving the quality of industrial workers, including industrial technicians and managerial personnel, and to lessen both labor and material wastes.

c. Enabling the various departments charged with carrying out industrial policies to have the same understanding and to work in coordination so as to eliminate deviations and to increase the efficiency of work.

d. Helping to carry out a quota control system and a financial auditing system.

e. Helping to devise plans to control the geographical distribution of industry, thus eliminating loss due to mistakes or to unenlightened operation.

f. Helping to give the government a general idea of the progress of all the industries throughout the country, enabling it to give industries constant guidance toward correct growth, and enabling it to be constantly prepared for any eventual industrial mobilization or demobilization, or for

shifting production emphasis from one product to another.

2. From the standpoint of individual industries, the establishment of industrial categories will have the following nine chief benefits:

a. It will enable the people to obtain a correct understanding of the industrial policies of the government, to know where to invest, and which industries will be most needed by the society. By paying due regard to both private and public interests, the people can establish and develop industrial enterprises without risking unnecessary loss or risks.

b. It will help to compare the systems of book-keeping and accounting in similar enterprises, to improve these systems, to facilitate the exchange of techniques and experiences, to obtain the full use of capital and resources within each industry, and to perfect the establishment and organization of warehouses and other facilities.

c. It will enable the various industries to make full use of similar research laboratories and other facilities as well as of the results of the experiments of other research institutions, thus constantly improving industrial production.

d. It will enable the industries to adopt and assimilate the experiences and achievements of similar industries in foreign countries, helping them to understand the newest techniques and methods of production as well as the trends of

industrial development, and to take measures to introduce and adopt such scientific discoveries and improvements on a large scale.

e. It will enable similar industries in the same area to sponsor collective contracts and to adopt similar labor rules, thus eliminating the trouble of making separate rules or sponsoring individual activities and preventing unnecessary variations and deviations.

f. It will enable similar industries in the same area to adopt similar wage and salary systems and to practice similar incentive methods to be put into effect by agreement of labor and management, thus preventing any loss which might occur in case of workers resigning from one factory to take jobs in another.

g. Industrial categories can also help industries in different localities to adopt different wage and salary scales and incentive methods with a view to increasing the supply of skilled labor and maintaining technical standards.

h. In helping to coordinate industry and commerce it will facilitate purchase agreements and orders, bringing closer the functions of production and consumption and thus lessening exploitation by middlemen.

i. Owing to the uniformity of industrial categories, standardized industrial records and precise statistics can be

made, thus facilitating the work of statistical survey, study and planning.

III. HOW MAY WE ESTABLISH INDUSTRIAL CATEGORIES?

The close interdependence of industrial categories and industrial construction has already been mentioned. Our country is industrially backward and, in order to keep pace with other industrially advanced countries and to establish a "peaceful, democratic, independent, united, prosperous and strong China", in order to take the shortest route possible and to eliminate certain problems once and for all, it seems to be imperative that we first establish a complete and rational system of industrial categories. In order to accomplish such an objective, this author believes that we must follow certain guiding principles:

1. Industrial categories must be established before the work of industrialization begins. In industrially advanced countries, such classifications are made in industries which have been developed for a considerable length of time and in which there is a growing need for industrial categories to eliminate waste and confusion and to serve as a guide in the proper development of industries. The result has been that certain defects persist in such industrial categories. Our country is still in the earliest stage of industrialization. It is much better for us to make plans and establish industrial systems beforehand so as to correct any mistakes and deviations in time. With respect

to such problems as what industries should be established first, where to locate the industries, how to distribute the responsibilities and how to coordinate the work of the various industries, the plans and systems established beforehand can serve as a guide and hence can eliminate many mistakes.

2. The system of industrial categories must be adopted on a nationwide scale. Those categories which have been made in past years lack uniformity; their contents are very confusing and there is too much variation in the choice of names. These classifications not only lack complete understanding of the meaning and functions of industries, but they lack the basic quality of being appropriate for adaption throughout the country. These regional and individual classifications may be useful for some industries or for certain government agencies, but they are certainly very confusing and contradictory when compared with each other. For the purpose of obtaining uniformity, I suggest that the Central Government invite scholars, experts, and representatives of industries to a conference to study and adopt a better system of industrial categories which shall be promulgated by the responsible government agencies for adoption throughout the country.

3. The industrial categories to be adopted should conform to the needs of the country. The trend of industrial construction of our country should be mechanization as well as rationalization. In the course of industrial development, we must not go in circles but must take the shortest route possible. In making

industrial categories we may take advantage of the methods used by the industrially advanced countries, but we must take what is good for us and add what we can contribute. In any event, we must keep in mind that the industrial categories which shall be adopted must be in conformity with the actual need of our own country.

4. The categories made must be suitable for practical use. If industrial categories are too simple, clear-cut divisions will be lacking; on the other hand, overcomplication is unnecessary. For example: the Patent Office of the Ministry of Commerce and Industry of the former government classified all trademarks into only eight categories; the Statistics Office of the Ministry of the Treasury used only ten categories. We consider such classifications as being too simple and unsatisfactory. However, the former Bureau of Labor used more than twenty categories, which we consider too many. The above examples of either too simple or too complicated a classification are not what we want. Hereafter, in the new system of industrial categories, we must make sure that the categories are proper and suitable for practical use.

5. When classifying industries, divisions and subdivisions should be listed in the order of their relative importance, with those of greater importance appearing at the top of the list. For example, those industries manufacturing capital goods may be spoken of as an industry among industries. What are generally called key industries are primarily heavy industries. The progress

made by these industries serves as a standard for industrial development. Industries which devote themselves to manufacturing consumer's good are largely dependent on the former type of industry and should be placed next to heavy industries. Furthermore, all industries under these two main categories should be arranged according to their respective importance. It should be specified that when industrial categories are referred to by enterprises or by government agencies, the original order of arrangement should be preserved.

6. When various industries are being arranged into an orderly classification, call numbers can be designated. This will not only help to fix the relative positions of the various industries within the system, but it will also facilitate investigation, postal and telegraph delivery, thus helping to save labor and materials.

7. In arriving at names for the various departments of industries, the following principles should be followed:

a. The names to be adopted should be uniform in order to avoid confusion.

b. The names should contain as few words as possible and the words used should contain as few strokes as possible in order to make them easy to write.

c. The sounds of the names should be harmonious and easy to read; names having similar sounds should be avoided

when naming different categories of industries in order to avoid confusion.

d. On the condition that the above principles are not violated, old names which have become common usage may be continued in use.

e. In industries which are comprised of a number of smaller industries the names for such industries should be represented by key words. To the extent that it does not cause confusion, prepositions should be avoided.

IV. A LIST OF PROPOSED INDUSTRIAL CATEGORIES

In accordance with the principles mentioned in the above, a list of proposed industrial categories is hereby given:

1. Mining and Refining Industries

A. Fuel Industry

a. coal industry

b. coal distillation

c. synthetic gas manufacturing

d. oil industry

e. briquet manufacturing

B. Iron Mining and Steel Refining

C. Nonferrous Mining and Refining

D. Nonmetal Mining and Refining

E. Foundries

2. Machine Manufacturing Industries

A. Motor Manufacture

B. Machine Tool Manufacture

C. Specialized Machine Manufacture

a. chemical machine manufacture

b. food-making machine manufacture

c. textile machine manufacture

d. clothing machine manufacture

e. lumbering machine manufacture

f. office and school supply machine manufacture

g. medical machine manufacture

h. building and construction machine manufacture

D. Farm Machine Manufacture

E. Other Machine Manufacturing Industries

3. Transportation Industry

A. Shipbuilding Industry

B. Automotive Manufacture

a. boxcar and locomotives manufacture

b. automobile industry

c. electric car manufacture

C. Aircraft manufacture

D. Other nonmechanized means of transportation manufacture

4. National Defense Industries

A. Naval ship manufacture

B. Military aircraft manufacture

C. Armored car manufacture

D. Arms manufacture

E. Ammunition manufacture

5. Metal Products Manufacturing Industries

A. Building and construction materials manufacture

a. sheet metal manufacture

b. pipe manufacture

e. radiator, boiler and stove manufacture

d. wire manufacture

c. nail manufacture

B. Balances and measuring equipment manufacture

C. Chronometer manufacture

D. Needle manufacture

E. Medical equipment manufacture

F. Carpentry equipment manufacture

G. Home appliance manufacture

6. Water Supply and Electric Power Industries

A. Water supply industry

B. Electric power supply industry

C. Electric lighting equipment industry

D. Electric heating equipment industry

7. Electric Appliance Manufacturing Industries

A. Generator manufacture

B. Telecommunications equipment manufacture

a. wire telecommunications equipment manufacture

b. wireless telecommunications equipment manufacture

C. Electric wire manufacture

D. Electric equipment manufacture

a. electric instrument manufacture industry

b. electric light installation equipment manufacture

c. electrical battery manufacture

d. insulating equipment manufacture

E. Other electric equipment and appliance manufacture

8. Chemical Industries

A. Chemical materials manufacture

a. acid manufacture

b. alkali manufacture

c. salt for industrial use

B. Pottery and porcelain industry

a. pottery manufacture

b. brick and tile manufacture

c. cement manufacture

d. enamel manufacture

C. Match industry

D. Chemical fertilizer industry

E. Drug industry

F. Rubber industry

G. Paint and dye materials manufacture

H. Soap and candle manufacture

I. Oil and fat industry

a. mineral oil extracting industry

b. vegetable oil extracing industry

c. animal fat industry

J. Glass manufacture

K. Chemical fibre manufacture

L. Soulptor's wax manufacture

M. Other chemical supply industries

9. Food Industries

A. Flour industry

B. Milling industry

C. Salt industry

D. Oil industry

E. Sugar industry

F. Tobacco industry

G. Beverage industry

H. Seafood preparing and packing

I. Meat preparing and packing

J. Other food and beverage industries

10. Textile Industries

A. Cotton textile industry

a. cotton weaving industry
b. cotton spinning industry
c. worsted making industry
d. canvas manufacture
e. cotton cloth dying and printing industry

B. Woolen textile industry

a. woolen spinning, weaving, dying, and printing industry
b. camels hair weaving industry
c. other woolen textile industries

C. Silk industry

a. silk processing industry
b. silk weaving industry
c. satins industry
d. silk refining and dying industry

D. Hemp industry

a. hemp spinning industry
b. hemp weaving industry
c. hemp bag manufacturing

11. Clothing, Cosmetics and Jewelry Industries

A. Clothing industry

a. hat industry
b. underwear industry
c. knitting apparel industry
d. handkerchief industry
e. handbag industry
f. towels and linen industry
g. blankets and rugs industry
h. yarn spinning industry
i. button industry
j. leather goods manufacturing
k. raincoats and water-proof cloth manufacturing
l. other wearing apparel manufacturing

B. Cosmetics and ornament manufacture

a. cosmetic manufacture
b. lace making
c. embroidery industry
d. pearl and jewelry industry
e. silver ornament industry
f. other cosmetic and ornament industries

12. Timber Industry

A. Lumber milling industry

B. Sheet lumber industry

C. Spindle and shuttle manufacture

a. spindle manufacture

b. shuttle manufacture

D. Furniture manufacture

E. Other woodworking industries

13. Cultural and Educational Industries

A. Paper manufacture

B. Printing industry

C. Type founding

D. Scientific instrument manufacture

E. Office and school supply manufacture

F. Musical instrument manufacture

G. Athletic equipment manufacture

H. Other cultural and educational industries

14. Miscellaneous Industries

A. Handicraft equipment manufacture

B. Domestic supplies manufacture

C. Religious articles manufacture

D. Other handicrafts and industries

In the above list of proposed industrial categories, those under the numerals of 1, 2, 3, etc., are of the first order and are called main categories; a total of fourteen main categories have been made. Those under the letters of A, B, C, etc., are of the second order; those under the small letters of a, b, c, etc., are of the third order. This is the method of classification according to the main categories from which subdivisions are made. Due to the limitation of space here, the classification is made only to the third order. With the exception that more detailed classification still has to be made when making plans for the individual industries, the above list should be sufficient for use in making industrial surveys, compiling statistics and organizing trade unions and industrial associations. With respect to the classification of the fourth and fifth orders, such classification should be made according to the degree of progress made by the industry in question. For the purpose of obtaining uniformity and perfection, the method of classification given in this list should be used as a criterion when defining further categories.

In accordance with principles previously given in this article, the names used to designate the fourteen main categories should be as simple, common, and clear as possible; therefore, many new names have been coined. For example, "water supply and

electric power industry" is better and more common than "electrified industries", because water supply depends on electric power, and "water supply and electric power" was long ago adopted into common usage. In universities both here and abroad courses in "water supply" are taught by the department of civil engineering; therefore, our use of the name "water supply" has a scientific origin. The category of "cultural and education industry" has also become familiar to all and seems to be much better than "industry of printing and stationery making", "paper making and printing industry", and "printing and publishing industry". Such long names as "industry for producing means of transportation", "industry for making food and drinking materials" etc., are only nuisances. We can save ourselves much trouble by simply using such names as "transportation industry" and "food industry" and so on. They are simpler and more to the point.

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A STUDY OF INDUSTRIAL CATEGORIES

Liu Teh-sun

I. THE NEED FOR INDUSTRIAL CATEGORIES

In the May issue of Chinese Industry Comrade Wu Li-pen published an article entitled "Proposed Industrial Categories" in which he made some very valuable points. When the author was present at a meeting sponsored by the Committee on Financial and Economic Affairs of East China for the discussion of forms for statistical reports, he noticed that due to the difference in methods of classification, statistics on the number of firms opened and firms going out of business in the Shanghai area compiled by the Bureau of Commerce and Industry could not be compared with those compiled by the United Association of Commerce and Industry. For the same reason comparative study of statistics on production and sales of taxable commodities compiled by the Bureau of Commodity Tax and statistics on industrial electricity consumption compiled by the Bureau of Public Utilities is impossible. It was pointed out by Comrade Wu that "the industrial categories used in commercial and industrial taxes, commodity tax, business tax, and in the regulations on licensing of commercial and industrial firms are entirely different." Since it is impossible to make comparisons from statistics derived from different classification methods even on a local basis, it goes without saying that it is hardly possible on a nation-wide scale.

In order to assign each industrial unit specific tasks with a view toward stepping up the nation-wide industrial reconstruction program, the Committee on Financial and Economic Affairs is making a general survey of public and semi-private industrial and commercial

enterprises. Since private economic enterprises are supposed to promote the development of the entire social economy under the leadership of the public authority as prescribed in the Common Program, it is believed that the government will take a general census of the private economic enterprises as well. Therefore, it is necessary to prepare a workable system of industrial categories to facilitate such a census.

The prerequisite for a tax system intended to encourage certain industries but restrict others is a clear and definite classification. Such a classification of industries is also necessary for the organization of various trade associations and unions because failure to define industrial enterprises will result in great confusion. An example of this can be seen in the confusion which occurred shortly after the liberation of Shanghai when the Timber Trade Association included both the lumber mills (manufacturers) and lumber dealers (merchants), and the Printing Trade Association included both the printing firms (manufacturers) and printing retailers (merchants).

Comrade Wu precisely points out what is needed: "In order to achieve a uniform classification system, the various concerned agencies in the Central Government should invite experts and representatives from various industries to make a joint study and accordingly draw up a workable industrial classification system to be followed throughout the nation."

The author is deeply aware of the necessity for such a unified system. Based on the experience he derived from participation in the industrial surveys in Shanghai, sponsored in 1931 by the China Economic and Statistical Research Bureau, and on his experience in the census

of industrial enterprises in 1933, this brief article is hereby presented to stimulate further discussion.

II. COMPARISON OF PREVIOUS CLASSIFICATIONS

A rough classification of various industries may be obtained by observing the occupations of the people. The village people engage mainly in occupations concerned with the production of various raw materials for industries such as agriculture, forestry, fishing and cattle raising. The urban people engage mainly in manufacturing, commerce, public organization, or independent professional practices. The industry which aims at facilitating commodity flow between cities and villages is called transportation. A fundamental classification of industries follows:

(1) Primary industries, which include agriculture, forestry, fishing, and cattle-raising.

(2) Secondary industries, consisting of mining and manufacture.

(3) Services industries, including transportation, commerce, banking, government service, independent professional practice, and personal or domestic service.

Due to the different degrees of industrialization, industrial categories vary from one country to another. An industrial classification consisting of 16 categories was established by the China Economic and Statistical Research Bureau on the basis of the classification adopted, with minor modifications, by the International Labor Office. Two sets of categories were derived by the former Ministry of Economic Affairs in 1937 and 1947, respectively. A more recent classification has been prepared by Comrade Wu. A comparison of all these sets of categories is made in the following Table.

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A COMPARISON OF THE INDUSTRIAL CATEGORIES FROM VARIOUS SOURCE

International Labor Office	Economic Research Bureau ('33)	Ministry of Economic Affairs ('37)
1. Lumber Products	1. Lumber Products	6. Timber Processing
2. House Furniture	2. House Furniture	14. Woodworking, rattan mat-working
3. Metals (except precious metals)	3. Metallurgy	2. Metallurgy
4. Machinery and miscellaneous Metal Products	4. Machinery and Metal Products	3. Metal Products 4. Machinery Manufacture 5. Electric Appliances
5. Vessels, surface and air transportation facilities	5. Transportation facilities	15. Transportation facilities
6. Brick, tile, porcelain, glass, etc.	6. Stonework and earthenware	7. Stonework and earthenware
7. House, road, railroad construction	7. Construction materials	13. Construction materials
8. Gas, electric power and water supply	8. Public utilities	1. Water, gas, and electric power supplies
9. Chemical products	9. Chemical industry	8. Chemical industry
10. Textile industry	10. Textile industry	11. Textile industry
11. Clothing	11. Clothing	12. Clothing
12. Leather and rubber industries (except shoe industry)	12. Leather and rubber industries	

RESTRICTED

E INDUSTRIAL CATEGORIES FROM VARIOUS SOURCES

Affairs ('37)	Ministry of Economic Affairs ('47)	Wu Li-pen
	1. Lumber products	12. Lumber industry
an mat-working	8. Metallurgy	1. Mining and Metallurgy
	9. Metal products	5. Metal products
ture	10. Mechanical devices	2. Machinery
es	11. Electrical appliances	11. Electrical appliances
acilities	12. Transportation facilities	3. Transportation industry
rthenware	7. Stonework and earthenware	
erials		6. Water and electric power supply
electric		
	6. Chemical industry	8. Chemical industry
y	2. Textile industry	10. Textile industry
	3. Clothing industry	11. Clothing industry
	1. Food and beverages industry	9. Food industry

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(1)	(2)	(3)
13. Food, beverages and tobacco	13. Food products	9. Food products 10. Tobacco
14. Paper manufacturing, printing, and box manufacturing	14. Paper manufacturing and printing	16. Cultural industry
15. School supplies, musical instruments, watch manufacturing and manufacture of precious metal products	15. Ornaments and laboratory instruments	17. Art supplies
16. Miscellaneous products manufacture	16. Miscellaneous industries	19. Miscellaneous industries 18. Munitions industry

RESTRICTED

(4)

5. Paper and printing industries

13. Miscellaneous industries

(5)

13. Cultural and Educational industry

14. Miscellaneous industries

4. Munitions industry

RESTRICTED

In the above Table there is complete agreement on the classifications of the lumber industry, transportation facilities, manufacturing, chemical, textile, clothing, food (except that the former Ministry of Economic Affairs classified the tobacco industry as a separate item within the food industry), and miscellaneous industries. Water, electricity, and gas supplies were not included in the classification made by the Ministry of Economic Affairs in 1947. The cultural and educational industry includes paper manufacture, printing, manufacture of musical and scientific instruments, etc. There is also agreement on metallurgy in the latter 4 sets of classifications of our country except that Comrade Wu includes in it the mining industry which covers fuel industry; the definition of the metallurgical industry is essentially the same in the 5 sets of categories since the metal products industry in the classification made by the International Labor Office consists of (A) steel refining and casting and the manufacture of various alloys, (B) foundries. In Wu's classification the earthenware and stonework industry is included in the chemical industry while the other 4 classifications make it a separate item. The international Labor Office and Economic Research Bureau combine machine manufacture and metal products manufacture in one category, while the classifications made by the Ministry of Economic Affairs and by Comrade Wu break it into three categories. House furniture manufacture or woodworking, rattan mat-working, construction materials manufacture are included in neither Wu's classification nor in the classification made by the former Ministry of Economic Affairs. Leather and rubber manufacturing becomes a separate category in the classification established by the International Labor Office and by the Economic Research Bureau, while in the other classifications it is incorporated in the category of chemical industry.

III. DEFINITION AND ORDER OF THE INDIVIDUAL CATEGORIES

The classifications set up by the International Labor Office and Comrade Wu are based on: (1) nature of the raw materials, (2) manufacturing method, and (3) the use of the products. These three principles were followed by other systems of classification in our country. The author also follows similar principles, and in accordance with the industrial policy defined in the Common Program, he has prepared a Table of the industrial categories where heavy industries are placed first in order, textile and foods industries second, and then other light industries.

The content of the author's classification is as follows:

1. Mining industry: This refers only to mineral ore extraction and the preliminary treatment of ore. Hence it consists of fuel (coal, oil), mining, ferrous metal (iron) mining, mining of non-ferrous metals (copper, lead, zinc, aluminum, magnesium, antimony, etc.), and non-metal (limestone, asbestos, gypsum, fluorite, etc.) mining.

2. Metallurgy industry: This refers to the refining of the crude products from the mining industry. Hence it consists of the coal distillation industry, gas industry, oil refining industry, non-ferrous metal metallurgy industry and ferrous metal metallurgy industry.

3. Machine manufacture: This refers to the industries manufacturing molds, machinery and metal products. It includes foundries, machinery manufacture (manufacture of motors, machine tools, specialized machinery, agricultural implements, etc.), machine maintenance, machine parts assembly, and metal products.

4. Electric machine and appliance manufacture: This includes the manufacturing of electric motors, telecommunications equipment, wire, and electric appliances (stoves, flash lights, lamps, and sun lamps).

5. Water and power supply industry: Sometimes this is simply known as the power industry, a term which would logically exclude the water supply industry. In fact, in many cases the water supply and power supply come from the same company. Thus the term water and power supply industries is a more inclusive term. (Power supply also includes electric power and electric lighting.)

6. Lumber industry: This includes lumber milling, sheet lumber manufacture, softwood manufacture and the manufacture of other wood products. It does not include, however, the manufacture of household furniture, nor does it include paper manufacture since paper manufacture in China does not utilize woodpulp exclusively as a raw material and since paper manufacture is so closely related with the printing industry.

7. Stonework and earthenware industry: In many countries this industry is listed as a separate item, distinct from other industries, but in Switzerland it is included in the construction materials and furniture manufacturing industry, and is included in the non-metal mining industry in Canada. It should not be included in the construction materials and furniture manufacturing industry because it contains a great number of sub-divisions. Furthermore, the product of one of its sub-divided industries, clay molds, is not a construction material. The stonework and earthenware industry should not be included in the non-metal mining industry because it is a processing industry. It is

distinguished from the chemical industry because its manufacturing process is not as complicated as that of the chemical industry. Finally, since cement, tile and brick, glass, earthenware molds, and asbestos are all made of either stone or clay, it seems suitable to group the industries which manufacture these products under one single category, the stonework and earthenware industry.

8. Construction industry: This industry is listed next to the metallurgy industry, lumber industry, and stonework and earthenware industry because products from the latter three industries constitute the essential construction materials. And because building is essential to all kinds of production, the construction industry is listed ahead of many other industries. The construction industry occupies an important place in Russian economy and the same is true in China. Hence we classify it separately. It includes the manufacturing of furniture, for furniture may be considered as an inseparable part of the building. It is to be noted that we do not distinguish non-metal furniture from metal furniture because the manufacturing of furniture is always easily distinguished from any other industry. According to its use we classify the manufacture of furniture as part of the construction industry.

9. Transportation industry: This includes the manufacture of hand-operated and motor transportation vehicles either for the air, water, or surface. It also includes parts assembly and maintenance of the various transportation vehicles.

10. Chemical industry: This includes all industries manufacturing acids, alkalis, fertilizers, hydrogen, dyes, drugs, fats, candles, matches, leather products, rubber, alcohol, etc.

11. Textile industry: This includes the weaving and processing of natural or artificial fabrics. It also includes cotton processing, packing, the dyeing of cotton, nylon, wool, and silk fibers.

12. Food industry: This includes rice milling, wheat milling, the manufacturing or processing of vegetable oil, salt, sugar, tea, cigarettes, wine and liquor, candy, biscuits, beverages, canned food, etc.

13. Clothing industry: This includes the industries which manufacture shirts, handkerchiefs, lace, towels, blankets, shoes, hats, waterproof clothes, buttons, etc. The manufacture of cosmetic articles, however, should be included in the chemical industry.

14. Cultural and educational industry: This includes paper manufacture, printing, typemaking, lithographing, movie making, manufacture of scientific instruments, musical instruments, sports goods, timepieces, stationery, toys, etc.

15. Miscellaneous industries: These include industries which are not covered in the above categories, for instance the bristle industry, animal enteron [used in making sausage] industry, etc.

16. National defense industry: As specified in the Common Program, China is to build a new modernized army, air force, and navy. Hence the national defense industry is an industry of great importance. However, due to the very nature of the defense industry, secrecy is required, and therefore figures on that industry will not always be available. For this reason we place it last in our list of categories for the sake of expediency in compiling statistics. The national defense industry includes naval ship building, airplane manufacture,

armored car and other steel plate industries.

A 4-division system was adopted in the industrial census conducted by the former China Economic and Statistical Research Bureau in 1933. For instance, the silk and silk textile industry under the category of the textile industry, includes silk processing and silk weaving. Silk processing in turn includes the processing of factory silk, Shuang-kung silk [transliterated], and thin silk. Under silk weaving there are two divisions, satin and pongee. (Hence the numeral system is somewhat different from that used by the author.)

11-2 silk processing and silk weaving

11-2-1 silk processing

11-2-1-1 factory silk

11-2-1-2 Shuang-kung silk

11-2-1-3 thin silk

11-2-2 silk weaving

11-2-2-1 satins

11-2-2-2 pongee

The author believes that there should not be a great number of main categories although detailed divisions should follow the main categories. The 4-division system is very valuable for industrial planning. However, for other purposes such as tax collection, a 2-division system would be adequate.

The author also contends that factories in the postwar period should be broken down into 4 classes: (1) large scale factories, (2) small scale factories, (3) handicraft factories, and (4) foreign-owned factories. Under the former Kuomintang regime, the criterion for determining the size of an industry was the number of workers. For in-

stance, under the former Factory Act a factory using electric power and having more than 30 workers is within the jurisdiction of the Factory Act. The Shanghai Textile Manufacturer's Association, however, considered that a factory which has more than 3,000 spindles is a large-scale factory while a factory having less than 3,000 spindles is a small-scale factory. It seems that the exact criteria for identifying the size of a factory should be set up by the Government. Handicraft industries occupy an important place in the nation's economy; for instance, we can find almost anywhere a rice grinding mill driven by animal power and flour mills, vegetable oil extraction plants, and machine repair shops with one or two lathes, etc. These handicraft industries should be listed accordingly in the system of industrial categories. Factories controlled by foreign capital are relatively few in number although they play a rather important part in the whole economy. Consequently these industries should be enumerated in the categories. According to the author's opinion, all factories should be classified under the above mentioned 4 classes. The statistical table takes the following form:

	Number of Factories	Total Capital	Workers
(1) Large	-----	-----	-----
(2) Small	-----	-----	-----
12-8 Tobacco Shanghai (3) Handicraft	-----	-----	-----
(4) Owned by Aliens	-----	-----	-----

A DETAILED INDUSTRIAL CLASSIFICATION

According to the methods of classification mentioned above, which are based on the detailed categories devised by the China Economic and Statistical Research Bureau with some modifications by the

author, a detailed classification is given as follows:

It is to be noted that some individual plants produce two commodities of entirely different nature. Examples of this are, the Shanghai San-hsing Textile and Steel Corporation and one manufacturer in Chekiang who produces canned food and face cream. We include such industrial plants in categories according to the nature of their main products with additional phrases indicating their subsidiary products. However, problems arise when we try to classify some electric power plants in the Northwest area. These plants usually manufacture flour. Deviation would result if we placed these plants exclusively under the heading of either public utilities or flour industry. But the total number of plants would be inaccurate if we counted these plants in both public utilities and the flour industry. Such problems deserve further study.

THE PROPOSED INDUSTRIAL CATEGORIES

1. Mining industry
   - 1-1 Fuel mining
   - 1-2 Ferrous metal mining
   - 1-3 Non-ferrous metal mining
   - 1-4 Non-metal mining

2. Metallurgy
   - 2-1 Coal distillation
   - 2-2 Coal Gas manufacture
   - 2-3 Petroleum refining
   - 2-4 Ferrous metal metallurgy
   - 2-5 Non-ferrous metal metallurgy

3. Machine manufacture

- 3-1 Foundries
- 3-2 Machine manufacture
- 3-3 Machine repair
- 3-4 Machine parts assembly
- 3-5 Metal products manufacture

4. Electric machine and appliance manufacture

- 4-1 Electric motors
- 4-2 Telecommunications equipment
- 4-3 Wire
- 4-4 Electrical appliances

5. Water and Power supplies

- 5-1 Water supply
- 5-2 Power supply

6. Lumber industries

- 6-1 Lumber milling
- 6-2 Sheet lumber manufacture
- 6-3 Softwood manufacture
- 6-4 Miscellaneous wood products manufacture

7. Stonework and earthenware industries

- 7-1 Cement industry
- 7-2 Tile and brick
- 7-3 Glass
- 7-4 Fire-proof materials
- 7-5 Asbestos manufacture
- 7-6 Pottery
- 7-7 Limestone

8. Construction industries

- 8-1 Construction materials manufacture
- 8-2 Furniture

9. Transportation industries

- 9-1 Ship-building industry
- 9-2 Motor-vehicles
- 9-3 Bicycles and other vehicles manufacture
- 9-4 Civil aviation

10. Chemical industries

- 10-1 Acid manufacture
- 10-2 Alkali
- 10-3 Fertilizer
- 10-4 Hydrogen
- 10-5 Dyes
- 10-6 Drugs
- 10-7 Fats and oils
- 10-8 Soap and candles
- 10-9 Matches
- 10-10 Leather and leather goods
- 10-11 Rubber
- 10-12 Alcohol
- 10-13 Paints
- 10-14 Porcelain
- 10-15 Ceramic materials
- 10-16 Cosmetics
- 10-17 Other chemical products manufacture

11. Textile industries

- 11-1 Cotton textile industry
- 11-2 Silk Textile
- 11-3 Woolen Textile
- 11-4 Flax Textile

12. Food industries

- 12-1 Rice milling industry
- 12-2 Wheat flour
- 12-3 Vegetable oil
- 12-4 Salt manufacture
- 12-5 Sugar
- 12-6 Dairy products
- 12-7 Breweries
- 12-8 Tobacco
- 12-9 Canned foods
- 12-10 Tea
- 12-11 Egg products
- 12-12 Beverages
- 12-13 Candy and biscuits
- 12-14 Miscellaneous food products

13. Clothing industries

- 13-1 Clothes tailoring
- 13-2 Clothes knitting
- 13-3 Towels, blankets
- 13-4 Miscellaneous clothes manufacture

14. Cultural and educational industries

- 14-1 Paper manufacture
- 14-2 Printing industry

14-3 Scientific instrument industry

14-4 Musical instruments

14-5 Sports goods manufacture

14-6 Timepieces

14-7 Stationery

14-8 Toys manufacture

14-9 Miscellaneous cultural and educational industries

15. Miscellaneous industries

15-1 Bristle industry

15-2 Animal enteron processing

15-3 Hair brush manufacturing

15-4 Mirror manufacturing

15-5 Thermos bottle manufacturing

15-6 Other handicraft industries

16. National defense industries

16-1 Naval ship-building

16-2 Airplane industry

16-3 Armored car

16-4 Armors

16-5 Munitions manufacturing

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